48-5-26/56

TITLE: On Phosphors Based on $CaSO_4$ (O fosforakh m osnove $CaSO_4$)

0.005 to hundreds of roentgens could be measured by using a photomultiplier with a galvanometer for determination of brightness with a screen of 1.5 cm^2 area. One of the advantages of applying $CaSO_4$ for this purpose is its non-sensitivity to visual light.

The report was followed by a discussion.

Two Russian references are cited.

INSTITUTION: Central-Asian State University im.Lenin

PRESENTED BY:

SUBMITTED: No date indicated

AVAILABLE: At the Library of Congress.

Card 2/2

NOSENKO, B.M., REVSIN, L.S., YASKOLKO, V.Ya.

Determination of the characteristics of trapping centers of crystalline phosphors. Trudy SAGU no.148:85-90 '59. (MIRA 13:7)

(Phosphors)

23742
S/089/61/010/006/008/011
B102/B212

21, D100 (1138, 1033, 1558)

AUTHORS: Krasnaya, A. R., Nosenko, B. M., Revzin, L. S.,
Yaskolko, V. Ya.

TITLE: Use of a $CaSO_4$ - Sm phosphor in dosimetry

PERIODICAL: Atomnaya energiya, v. 10, no. 6, 1961, 630 - 631

TEXT: The authors suggested a dosimeter (Zh. Tekhn. fiz., 26, 2046 (1956)),
which will operate with $CaSO_4$-Sm phosphor and exhibits a limited ability
for the conservation of the light sum stored. For this purpose $CaSO_4$-
based phosphors with a plurality of activators have been investigated
with respect to their luminescent properties. It was found that $CaSO_4$-Sm
only will combine the properties of a good storage ability of the light
sum with sufficient sensitivity. This phosphor has been further
investigated. The thermal - deexcitation curve of this phosphor shows
three peaks: at 65, 120 and $200^\circ C$ (at a heating rate of 40 deg/sec.).
The light sum of the last peak amounts to 90 % of the total light sum.

Card 1/3

23742

Use of a $CaSO_4$ - ...

The thermoluminescence spectrum of the phosphor consists of three narrow bands having maxima at 6200, 5900 and 5600 Å; their intensities behave like 56 : 43 : 1; the spectrum does not change during extinction. The light sum stored by the phosphor is a linear function of the radiation dose of 0.1 - 25 000 r; the dose rate (0.005 - 10^4 r/hr) influences the stored light sum not directly. The sensitivity of the $CaSO_4$·Sm phosphor amounts to about 1/10 of that of the $CaSO_4$-Mn phosphor. A comparison of the stored light sums of these phosphors (by blackening of a photographic plate) shows that the "absolute" sensitivity of the $CaSO_4$-Sm phosphor is 2.5 times greater than that of $CaSO_4$-Mn phosphor if the spectral sensitivity is taken into account. Keeping the phosphor at an increased temperature (40 - 120°C) will decrease the light sum and change the spectrum (at the beginning the first two peaks become weaker, at 70°C the de-excitation of the third peak also starts). At a weak but long radiation of the phosphor practically no losses of the light sum will occur; this has been found in a 42 days long radiation with 0.005 r/hr.

Card 2/3

Use of a $CaSO_4$ - ...

The stored light sum measured was equal to that calculated (corresponding to a dose of 5r). This property of the phosphor makes it possible to employ it for dosimetric purposes, even at small doses. This phosphor (like $CaSO_4$-Mn) cannot be excited by visible light (direct solar radiation) but in contrast to $CaSO_4$-Mn visible light is causing de-excitation (0.5 lux for 4 hrs will cause a 25 % loss of the stored light sum). Since $CaSO_4$-Sm is keeping the stored light sum much longer than $CaSO_4$-Mn, this phosphor is very well suited for permanent measurements, even at higher temperature (up to $100^{\circ}C$). There are 1 figure and 1 Soviet-bloc reference.

SUBMITTED: December 15, 1960

Card 3/3

20814

S/048/61/025/003/002/047
B104/B201

9.6150
24.3500 (1137, 1138, 1395)

AUTHORS: Nosenko, B.M., Revzin, L.S., Yaskolko, V.Ya., and Krasnaya, A.P.

TITLE: Thermoluminescence with different modes of excitation

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, v. 25, no. 3, 1961, 318 - 321

TEXT: This is a reproduction of a lecture delivered at the 9th Conference on Luminescence (Crystal Phosphors), which took place in Kiyev from June 20 to 25, 1960. The authors used $CaSO_4$-Mn, $PbSO_4$-Mn, Zn_2SiO_4-Mn, ZnS-Ag and ZnS-Cu phosphors to find the light sums of steady luminescence S_{st}, afterglow S_a, and thermoluminescence S_{th}, produced by electron excitation ($V = 0.5 - 7$ kev, $j = 10^{-5} - 10^{-10}$ a/cm^2), beta radiation (S^{35}; 40-500 μC) and photo-irradiation (ПРК -2 (PRK-2)-tube with filter). The specific light sums γ_{st}, γ_a and γ_{th} were also determined. Measurements were made in the temperature range from -180° to $+30^\circ$C at heating rates of 60°C/min

Card 1/7

Thermoluminescence with ...

and 150°C/min. The excitation densities were intercompared on the basis of the number of the excited ion pairs $\bar{n}$, produced per unit volume and per unit time. The measurement results are discussed for every phosphor, separately. $CaSO_4$-Mn has at 90°C a main peak of thermoluminescence; measured values corresponding to this peak are listed in Table 1. Table 2 gives the dependences of the specific light sums on temperature. $PbSO_4$-Mn has <u>one</u> peak of thermoluminescence at 54°C, the relative light sums being equal under beta excitation and electron excitation, and about 2.5 times as large as in the case of photoexcitation. On a temperature rise up to room temperature, the relative light sum produced by beta excitation increases by the sixfold at the expense of steady luminescence. The spectrum has two bands, an orange band of manganese ($\lambda_m = 615$ mμ), and a blue band of $PbSO_4$ ($\lambda_m = 425$ mμ). A photoexcitation yields an orange luminescence at all temperatures, and also an orange thermoluminescence. An electron excitation gives rise to an orange luminescence at room temperature, which turns blue on a temperature drop. Beta excitation produces a blue luminescence with a small orange portion. Zn_2SiO_4-Mn has two peaks of

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20814
S/048/61/025/003/002/047
B104/B201

Thermoluminescence with ...

thermoluminescence (a complicated one at - 88°C, and one at 75°C). ZnS-Cu
has a green band and two peaks of thermoluminescence (at -53°C and 22°C).
More details are given in Table 3. ZnS-Ag has a complicated peak of ther-
moluminescence, which can be separated into two maxima: one at -103°C and
one at -64°C. More data are given in Table 4. A fluorescence effect of the
cathode rays is observed on thin layers of the said phosphor, which are
practically transparent to the exciting light. The phosphor is excited up
to saturation by an ultraviolet radiation with $\lambda = 365$ mμ. The final part
of the paper deals with differences between excitation by corpuscular radi-
ation and by photons; it is stated in this connection, that a consideration
of excitation density and excitation depth well explains the differences
observed. The appearance of the fluorescence effect of the cathode rays is
explained by the fact that on an excitation of luminescence by electrons the
electric field produced by particle charges in the crystal leads to a flu-
orescence. There are 4 tables and 6 Soviet-bloc references.

ASSOCIATION: Kafedra optiki Tashkentskogo gos. universiteta im. V. I.
Lenina (Department of Optics of Tashkent State University
imeni V. I. Lenin)

Card 3/7

20814
S/048/61/025/003/002/047
B104/B201

Thermoluminescence with ...

Legend to Table 1: 1) type of excitation; 2) specific light sum of thermoluminescence at 20°C; 3) the same at 180°C; 4) particle energy in ev.; 5) $\bar{n}$; 6) $\bar{N}$ number of ion pairs produced per unit volume during excitation; 7) N_+ number of ion pairs produced in one particle track. A) excitation by electrons, B) beta excitation.

Таблица 1

Вид воз-буждения	$\eta_T (T_{CT} = 20°)$	$\eta_T (T_{CT} = 180°)$	V_{CT}	$\bar{n}$, см⁻³ сек⁻¹	$\bar{N}$, см⁻¹	$\bar{N}_{Л}$, см⁻¹
КВ	2,8	1,4	1500	10^{18}	10^{18}	10^{17}
ββ	1,4	0,7	15÷180	10^{13}÷10^{14}	10^{13}÷10^{14}	10^{18}

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S/048/61/025/003/002/047
B104/B201

Thermoluminescence with ...

Legend to Table 2: temperature dependence of specific light sums of thermoluminescence (A), steady luminescence (B), and the ratio $\eta_T = \gamma_{th}/\gamma_{st}$ (C).

Таблица 2

Измеряемая величина	$T_{CT} = 23°$	0°	−10°	30°	−40°	−80°	−127°	−170°
A γ_T	256	234	228	200	185	158	143	135
B γ_{CT}	183	164	160	155	147	145	160	173
C η_T	1,4	1,42	1,42	1,28	1,25	1,1	0,9	0,78

Card 5/7

Thermoluminescence with ...

Legend to Table 3: 1) mode of excitation, 2) η_π = specific light sum of afterglow divided by that of thermoluminescence, 3) $\eta_T = \gamma_T / \gamma_{ct}$, 4) and 5) the same as sub 3) referred to the two peak temperatures. 6) $\bar{n}$, 7) $\bar{N}$, 8) particle concentration. A) photoexcitation, B) beta excitation, C) electron excitation.

Таблица 3

Вид воз-буждения	$\eta_{\text{п}}$	η_T	η_{T_1}	η_{T_2}	$\bar{n}$, см$^{-3}$ сек$^{-1}$	$\bar{N}$, см$^{-3}$	N, см$^{-3}$
A ФВ-1	0,02	0,04	0,03	4,5	10^{12}	10^{16}	10^{15}
ФВ-2	0,04	5,5	1,0		10^{13}	10^{16}	10^{17}
B ВВ	0,03	2,0		0,07	$10^{14}+10^{15}$	$10^{16}+10^{17}$	
C КВ	Не произ-водится	0,23	0,15				

Card 6/7

Thermoluminescence with ...

S/048/61/025/003/002/047
B104/B201

Legend to Table 4: 1) mode of excitation, 2) U in kev, 3) number of ion pairs produced per cm³ of particle track, 4) $\bar{N}$, 5) light sum of thermoluminescence in relative units, 6) thickness of excited layer, 7)$\eta_\Pi = \gamma_a / \gamma_{st}$, i.e. specific light sum of afterglow divided by the specific light sum of thermoluminescence, 8)$\eta_T = \gamma_{th} / \gamma_{st}$, i.e., specific light sum of thermoluminescence divided by steady luminescence, 9) saturation, 10) limit value of light sum of afterglow, A) photoexcitation, B) electron excitation.

Таблица 4

1 Вид воз-буждения	2 U, keV	3 N_Π, см⁻²	4 $\bar{N}$, см⁻¹	5 $I_{ст}$, отн. един.	6 l, см	7 η_Π	8 η_T	9 Насыщение	10 S_T пре-дельная
A) Ф-2	—	—	10^{15}	$3 \cdot 10^5$	$2 \cdot 10^{-3}$	0,1	0,3	Нет По S_T	$2 \cdot 10^4$
	—	—	10^{17}	10^6	$2 \cdot 10^{-3}$	$2 \cdot 10^{-3}$	—		
			10^{18}						
B) КВ	3	10^{17}	10^{19}	$1,5 \cdot 10^{-2}$	$3 \cdot 10^{-6}$	$5 \cdot 10^{-3}$	$15 \cdot 10^{-3}$	Нет	$2 \cdot 10^7$
			10^{22}					По $I_{ст}, S_\Pi, S_T$	
	3	10^{17}	—	—	$3 \cdot 10^{-6}$	—	—		
	0,5	10^{17}	$5 \cdot 10^{21}$	—	—	—	—		$3 \cdot 10^2$

Card 7/7

KRASNAYA, A.R.; NOSENKO, B.M.; REVZIN, L.S.; YASKOLKO, V.Ya.

Excelectronic emission of $CaSO_4$-Mn, and $CaSO_4$-Sm phosphors.
Opt. i spektr. 7 no.4:526-528 Ap '62.   (MIRA 15:5)
(Electrons—Emission) (Phosphors)

24.3500

AUTHORS: Krasnaya, A.R., Nosenko, B.M., Revzin, L.S.,
           Yaskolko, V.Ya.

TITLE: On the exoelectronic emission of the phosphors
           CaSO4, CaSO4 - Mn, CaSO4 - Sm

TEXT: Earlier work on this subject is reviewed and the results
shown to lack agreement.   An investigation of the exoemission of
the phosphors CaSO4, CaSO4 - Mn and CaSO4 - Sm was therefore
undertaken.   The apparatus used and method of measurement are
described briefly.   The phosphors were excited by a Sr^{90}
β source and the results are shown graphically; exoemission
plotted against temperature for each phosphor.   The exoemission
for CaSO4 - Mn has two peaks with maxima at 100 and 144°C, while
the thermo-luminescence curve shows only one peak.   CaSO4 has
only one peak on its exoemission curve with a maximum at 134°C.
When Mn is added, new capture centres are formed and the general
intensity of emission is increased.   In the case of CaSO4 - Sm
exoemission is not observed while its thermoluminescence curve

Card 1/3

S/051/62/012/004/C12/015
E039/E485

On the exoelectronic ...

shows three peaks.   This shows that exoemission from $CaSO_4$ is strongly influenced by the activator and that there is no correspondence between thermoluminescence and exoemission.   The difference between these results and those of earlier workers appears, to be due to differences in the method of preparation of the phosphors.   The results are compared with a model suggested by A. Bogun and it is shown that the absence of a second peak in the thermoluminescence curve for $CaSO_4 - Mn$ can only be explained on the basis of the temperature of quenching (luminescence).   In $CaSO_4 - Mn$ this occurs at 200°C.   The full suppression of exoemission by Sm requires the assumption of pure hole characteristics for the luminescence of $CaSO_4 - Sm$ on this model which is contrary to the results obtained.   The effect of electron diffusion length is also discussed.   It is concluded that exoemission is due mainly to defects in the non-luminescent surface layers while the thermoluminescence is due to defects in the volume of the crystal.   Further experiments are required for the verification of these results.   It is suggested that the

Card 2/3

On the exoelectronic ...

S/051/62/012/004/012/015
E039/E485

method is a valuable one for the study of the surface layers
of crystals.   There is 1 figure.

SUBMITTED: September 26, 1961

Card 3/3

KRASNAYA, A.R.; YASKOLKO, V.Ya.

Effect of various activators on the exoelectronic emission from $CaSO_4$. Nauch. trudy TashGu no.221. Fiz. nauki no.21:79-81 '63. (MIRA 17:4)

ACCESSION NR: AR4032174   S/0058/64/000/002/D055/D055

SOURCE: Ref. zh. Fiz., Abs. 2D434

AUTHORS: Kulakova, S. N.; Yaskolko, V. Ya.

TITLE: Thermoluminescence of $CaSO_4$.Mn, $CaSO_4$.sm, and $CaSO_4$.Mn,Sm

CITED SOURCE: Nauchn. tr. Tashkentsk. un-t, vy*p. 221, 1963, 82-83

TOPIC TAGS: thermoluminescence, calcium sulfate manganese phosphor, calcium sulfate samarium phosphor, light sum, temperature maximum, activator concentration

TRANSLATION: The authors investigated the concentration dependence of the positions of the temperature maxima of the light sums and thermoluminescence spectra of the crystal phosphors $CaSO_4$.Mn, $CaSO_4$.Sn, and $CaSO_4$.Mn,Sn excited by β particles from Sr and by

Card   1/2

ACCESSION NR: AR4032174

x-rays.   The concentration of the activators varied from 0.0001 to
1 mol. %.   T. Razumova.

DATE ACQ: 31Mar64   SUB CODE: PH   ENCL: 00

Card   2/2

S/0058/64/000/002/D055/D055

ACCESSION NR: AR4032175

SOURCE: Ref. zh. Fiz., Abs. 2D435

AUTHORS: Nosenko, B. M.; Yaskolko, V. Ya.

TITLE: Interaction of the activators Mn and Sm in $CaSO_4$

CITED SOURCE: Nauchn. tr. Tashkentsk. un-t, vy*p. 221, 1963, 97-99

TOPIC TAGS: thermoluminescence, calcium sulfate manganese phosphor, calcium sulfate samarium phosphor, two activator phosphor, glow center, capture center, prior irradiation effect

TRANSLATION: The authors measured in the 20--300°C the thermoluminescence (TL) of the phosphors $CaSO_4 \cdot Mn$, $CaSO_4 \cdot Sm$, and $CaSO_4 \cdot Mn, Sm$, which glow under the influence of visible light, and the effect on TL due to prior irradiation of the phosphor with a large dose of ionizing radiation. It is established that some fraction of "foreign"

Card 1/2

ACCESSION NR: AR4032175

glow is present in each band of the TL of the two-activator phosphor, indicating transfer of energy from the Sm capture center to the Mn glow center, and to a greater degree from the Mn capture center to the Sm glow center. From an investigation of the exciting action of the light it is established that the absorption center for the visible light is connected with a definite capture center and a glow center.

DATE ACQ: 31Mar64   SUB CODE: PH   ENCL: 00

Card 2/2

KRASNAYA, A.R.; REVZIN, L.S.; YASKOLKO, V.Ya.

Preparation of phosphors on the basis of $CaSO_4$. Nauch. trudy
TashGu no.221.Fiz. nauki no.21:71-78 '63.   (MIRA 17:4)

NOSENKO, B.M.; YASKOLKO, V.Ya.

Relation between recombination luminescence and exoelectronic emission. Nauch. trudy TashGu no.221.Fiz. nauki no.21:84-96 '63.

Interaction of the Mn and Sm activators in CaSO₄. Ibid.:97-99
(MIRA 17:4)

NOSENKO, B.M.; REVZIN, L.S.; YASKOLKO, V.Ya.

Structure of phosphors on the basis of CaSO4. Nauch. trudy TashGU
(MIRA 18:5)
no.262 Fiz. nauki no.22:71-75. '64.

SPITSYN, F.N.; YASKOLKO, V.Ye.

Electron paramagnetic resonance of Mn^{2+} in crystal phosphors on the basis of $CaSO_4$. Nauch. trudy TashGU no.262 Fiz. nauki no.22: 76-78 '64.

(MIRA 18:5)

KRASNAYA, A.R.; NOSENKO, B.M.; YASKOLKO, V.Ya.

Exoelectronic emission from $CaSO_4$-based phosphors. Izv. AN SSSR.
Ser.fiz. 29 no.3:483-485 Mr '65.   (MIRA 18:4)

1. Kafedra optiki Tashkentskogo gosudarstvennogo universiteta
im. V.I.Lenina.

L 50333-65   EWT(1)   Pi-4   IJP(c)   S/0166/65/000/001/0081/0085

ACCESSION NR: AP5009151

AUTHOR: Krasnaya, A. R.; Nosenko, B. M.; Yaskolko, V. Ya.

TITLE: Exoelectronic emission of phosphors based on calcium sulfate

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 1, 1965, 81-85

TOPIC TAGS: exoelectronic emission, thermoluminescence, activated phosphor, calcium compound, electron trap, activation center

ABSTRACT: In view of the lack of a unified point of view concerning the nature of exoelectronic emission (EE), the authors extended their earlier studies of thermostimulated EE and thermoluminescence (TL) of phosphors based on $CaSO_4$ (Optika i spektroskopiya, Sb. 1, Lyuminestsentsiya, 1963, p. 223; Trudy TashGU, fiz. 1963, no. 221, 84; Izv. AN SSSR ser. fiz. 1962, v. 26, 459, no. 4) with an aim at ascertaining whether the same electron traps are responsible for both phenomena. The results indicate that the capture centers of EE and TL are different, although both are formed with participation of the activator. It is impossible to ascribe the EE

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L 50333-65
ACCESSION NR: AP5009151

phenomenon to a recombination mechanism. Manganese can penetrate into the $CaSO_4$ lattice in at least three manners, two of which are responsible for the EE and TL capture centers. The EE capture centers are preferentially produced, but when the Mn concentration is large, only a small fraction of the Mn participates in the production of these centers. Sm has a tendency to penetrate alongside the Mn. The EE is produced in the surface layer not thicker than 370 Å. Orig. art. has: 1 figure and 4 tables.

ASSOCIATION: Tashkentskiy gosuniversitet im. V. I. Lenina (Tashkent State University)

SUBMITTED: 13Jun64   ENCL: 00   SUB CODE: OP, SS

NR REF SOV: 003   OTHER: 007

Card 2/2

L 11915-66   EWT(m)/EWP(t)/EWP(b)   DIAAP/IJP(c)   JD

ACC NR: AP6001659   SOURCE CODE: UR/0051/65/019/006/0980/0982

AUTHOR: Nosenko, B. M.; Revzin, L. S.; Yaskolko, V. Ya.

ORG: None

TITLE: Determination of some parameters of beta-particle tracks in $CaSO_4$-Mn

SOURCE: Optika i spektroskopiya, v. 19, no. 6, 1965, 980-982

TOPIC TAGS: beta particle, luminescent material, luminescence

ABSTRACT: The authors note that when a luminescent material is excited by ionizing radiation, the true density is not the mean density of excitation, but the excitation density in the track (the quantity of ionized energy losses per unit of track volume). However, the establishment of the true density entails the difficulty of determining the track volume. For this reason, the authors propose a method of estimating the excitation density in the track which does not require a knowledge of the track volume and which makes use only of luminescence experiments. The method described is based on the fact that there is always a certain overlapping of the branches of a beta-particle track and, consequently, an increase in the mean excitation density in the track. It is shown that the mean excitation density in the track of a beta-particle is equal to the effective density of cathode excitation (in the same luminescent material) when the value of the relative storage is $g = g_\beta$. The dependence of the relative storage factor on the density of cathode excitation is studied for $CaSO_4$-Mn (1 mol. %). Orig. art. has: 5 formulas.

Card 1/2   UDC: 535.373.1:548.0

L 11915-66

ACC NR: AP6001659

SUB CODE: 20 / SUBM DATE: 10Apr65 / ORIG REF: 005 / OTH REF: 002

Card 2/2

L 28328-66   EWT(1)   IJP(c)   AT

ACC NR: AP6013080   SOURCE CODE: UR/0048/66/030/004/0681/0683

41
B

AUTHOR: Krasnaya, A.R.; Nosenko, B.M.; Yaskolko, V.Ya.; Sokolov, G.V.

ORG: Tashkent State University im. Lenin (Tashkentskiy gosudarstvennyy universitet)

TITLE: Parallel investigation of the luminescence and exoelectronic emission of
$CaSO_4$:Mn /Report, Fourteenth Conference on Luminescence held in Riga 16-23 September
1965/

SOURCE: AN SSSR. Izvestiya, Seriya fizicheskaya, v. 30, no. 4, 1966, 681-683

TOPIC TAGS: crystal phosphor, luminescence, calcium sulfate, electron emission,
thermoluminescence, beta radiation

ABSTRACT: For the purpose of clarifying the mechanism of exoelectronic emission the
dissipation with time of the stored emission sum S_e and of the stored light sum S_1 was
investigated at constant temperature. Then the storage curves were converted to decay
curves by differentiation with respect to time. The experiments were carried out on
$CaSO_4$:Mn (0.1 mole percent) phosphor at fixed temperatures in the range from 20 to
60°C. The phosphor was excited by β-particles from an Sr^{90} source. The results are
presented in the figure. Similar curves were obtained at other temperatures in the
20 to 50° range. The S_e curve for $CaSO_4$:Mn is rather distinctive: it exhibits an
inflexion point, so that the I_e curve has a distinct maximum. The afteremission curve

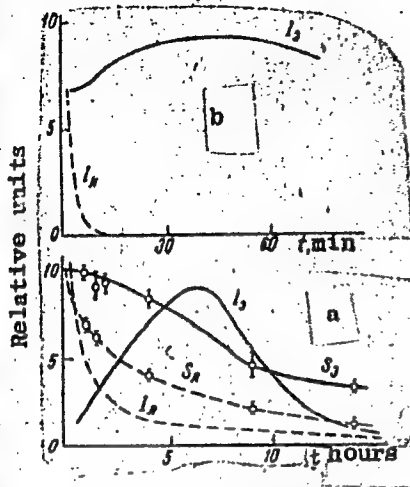Card 1/2

L 28328-66

ACC NR: AP6013080

Figure caption: a - time variation of loss of the emission sum J_e and the light sum S_1 at 40°C; deduced variation of the afteremission I_e and afterglow I_1. b - curves for I_o and I_1 obtained in preliminary experiments employing a new vacuum setup.

is reminiscent of curves characterizing the build-up of the daughter nuclide in radioactive decays. Accordingly, it is hypothesized that in the case of $CaSO_4$:Mn (in which different centers are involved in the exoelectronic emission and in the luminescence), in analogy with radioactive decay, the surface centers emitting the exoelectrons from as a result of disintegration of the "primary" trapping centers. An analytic expression for I_e is adduced; this is consistent with the experimental results. To eliminate some of the shortcomings of the experiments involving measurements of S, there was designed and assembled a more sophisticated vacuum setup for direct measurements of I_e and I_1. The results of preliminary (test) experiments employing the new setup are shown in figure b. The agreement with the earlier results is only qualitative; the possible reasons for the disparity are discussed. Orig. art. has: 4 formulas and 2 figures.

SUB CODE: 20/   SUBM DATE: 00/   ORIG REF: 005/   OTH REF: 004

Card 2/2

KRASNAYA, A.R.; NOSENKO, B.M.; YASKOLKO, V.Ya.

Exoelectronic emission of phosphors on a CaSO$_4$ base. Izv. AN
Uz. SSR. Ser. fiz.-mat. nauk 9 no.1:81-85 '65.   (MIRA 18:6)

1. Tashkentskiy gosudarstvennyy universitet imeni Lenina.

JASKONIS, J., red.; KANOPKAITE-ROZGIENE, S., red.; MERKYS, A., red.;
MIKALAUSKAITE, D., red.; BARTUSEVICIUS, V., tekhn. red.

[Problems of physiology and biochemistry; a festschrift in
honor of the 70th birthday of Professor Vl.Lasas, M.D.,
Corresponding Member of the Academy of Medicine of the
Lithuanian S.S.R., Member of the Academy of Sciences of the
Lithuanian S.S.R.]Fiziologijos ir biochemijos klausimai;
TSRS Medicinos mokslu akademijos nario korespondento, Lietuvos
TSR Mokslu akademijos akademiko, medicinos mokslu daktaro,
profesoriaus Vl.Laso 70 metu sukakciai pamineti. Vilnius, 1962.
274 p.   (MIRA 15:9)

1. Lietuvos TSR Mokslu akademija, Vilna. Botanikos institutas.
    (PHYSIOLOGY)   (LASAS, VLADAS, 1892-) (BIOCHEMISTRY)

MATYUSHIN, I.F.; YASKORSKIY, A.A.

Surgical treatment of a heart block utilizing the auricular appendage as the conductor of the cardiac impulses in an experiment; a preliminary report. Uch. trudy GMI no.19:300-302 '65.
(MIRA 18:8)

1. Iz kafedry operativnoy khirurgii Gor'kovskogo gosudarstvennogo meditsinskogo instituta imeni S.M.Kirova.

AYZENVARG, Khaim Vol'fovich; POSTNIKOV, S.A., inzh., retsenzent;
YAS'KOV, A.A., inzh., retsenzent; RZHECHITSKIY, B.D.,
inzh., red.; KAN, P.M., red.

[Textbook for electric harbor crane operators] Uchebnik
kranovshchiku portal'nogo elektricheskogo krana. Izd.2.,
ispr. i dop. Moskva, Transport, 1964. 241 p.
(MIRA 17:12)

86133

$9.4120 (1003, 1105, 1140)$

Translation from: Referativnyy zhurnal, Elektrotekhnika, 1959, No. 12, p. 213, # 25381

AUTHOR: Yas'kov, D.A.

TITLE: Methods of Calculation of Semiconductor Igniters for Ignitron Amplifiers

PERIODICAL: Izv. Leningr. elektrotekhn. in-ta, 1957, No. 31, pp. 174-187

TEXT: Mathematical expressions are derived which enable one to find quick-ly the principal dimensions and configuration of an igniter satisfying the given electric characteristics or to determine the values of the principal parameters of ignition if the dimensions and configuration of the igniter are given. The method of calculating igniters for ignitrons was tested on large lots, and a satisfactory coincidence of calculated and experimental data was obtained. It was established that the cathode spot on the surface of Hg was caused by contact phenomena. One of the most important factors determining the appearance of the

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86133

S/112/59/000/012/074/097
A052/A001

Methods of Calculation of Semiconductor Igniters for Ignitron Amplifiers

cathode spot is securing the maximum electric field intensity along the igniter on
the level of its submersion into Hg. For this purpose the current passing through
the igniter must change with the diameter according to the square trinomial law.
There are 3 references.

D.L.K.

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

9.4320
9.2700 (1001, 1159, 1385)

30123
S/194/61/000/007/039/079
D201/D305

AUTHOR: Yas'kov, D.A.

TITLE: Semiconductor thermo-resistors based on silicon and boron carbide

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 7, 1961, 18, abstract 7 D123 (Izv. Leningr. elektrotekhn. in-ta, 1960, no. 43, 112-124)

TEXT: The mass produced industrial thermo-resistors TP (TR) type MMT have a resistance temperature coefficient α_R equal to 0.024 - 0.034 per degree C. It is impossible, therefore, to compensate for the temperature errors of instruments, especially low-resistance, by the direct connection of MMT into the compensating network. It is rational to use TR's made of materials having α_R near to α_ρ of metals in its absolute value, but of opposite sign. Tests have been made with low resistance TR's based on semi-conductors: oxides of Cu, Mn, Co, Ti; carbides of Si, B and SiC in

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S/194/61/000/007/039/079
D201/D305

Semiconductor thermo-resistors...

B_4C being semiconductors with α_R nearest to α_ρ of metals have had their TR fully investigated using an industrial grade of SiC (made in USSR); in the positive range of temperatures they exhibit α_R approximately half as small as α_R of metals. The increase of α_R of such TR is possible when a high purity SiC is used. With B_4C it is possible to obtain low-resistance TR's, with which it is easy to compensate temperature errors of accurate instruments. The characteristics of B_4C TR depend to a great extent on technological factors. This is why, by varying the parameters of technological processes, it is possible to control within certain limits, the TR properties. The change of the B_4C TR with temperature follows an exponential law. The slope of the exponential is, however, very small, which makes it possible to obtain quite an adequate compensation of a nearly linear temperature resistance change of metals. The characteristics of B_4C TR's are very stable with time, at abrupt changes of temperature and at long periods of exposure to humidity. The technology of production of low-resistance TR's is comparatively

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Semiconductor thermo-resistors...

30123
S/194/61/000/007/039/079
D201/D305

simple, does not require complex equipment and enables the mass production of these products. ⎣Abstracter's note: Complete translation⎦

Card 3/3

89810

9.2110 (1001,1145,1153)

S/110/61/000/002/006/009
E194/E455

AUTHOR: Yas'kov, D.A., Candidate of Technical Sciences

TITLE: A Standard High-Voltage Compressed-Gas Capacitor
             for an Operating Voltage of 250 kV

TEXT: Bridges for measuring the electrical properties of
insulation at high voltage require standard capacitors.   The
technical requirements applicable to such standard capacitors are
best met by air capacitors.   The size may be made much smaller if
compressed gas is used.   The construction described in this
article is illustrated schematically in Fig.1.   The high-voltage
insulator serves as a gas container and on the top of it is
mounted the high-voltage terminal and electrode.   The
electrodes are contained in an impermeable paper-bakelite cylinder
1400 mm long.   The inner low-voltage electrode and the high-voltage
electrode are copper cylinders.   The construction is described in
some detail.   The capacitor is filled with nitrogen at a pressure
of 12 atm.   A gas pressure valve is provided.   The capacitor is
mounted on a trolley.   The following data are given.

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S/110/61/000/002/006/009
E194/E455

A Standard High-Voltage ...

Capacitance picofarads 57.00; test voltage kV effective
(5 minutes) 300; loss angle (at 250 kV) less than 10^{-4};
temperature coefficient of capacitance 30×10^{-6} per °C;
overall height mm 1600; and trolley size mm 600 x 600.
The electrical characteristics are independent of voltage up to
the working limit and prototype capacitors have successfully
withstood acceptance tests and are in service.   There are
3 figures.

SUBMITTED: February 15, 1960

Card 2/3

89810

S/110/61/000/002/006/009
E194/E455

A Standard High-Voltage ...
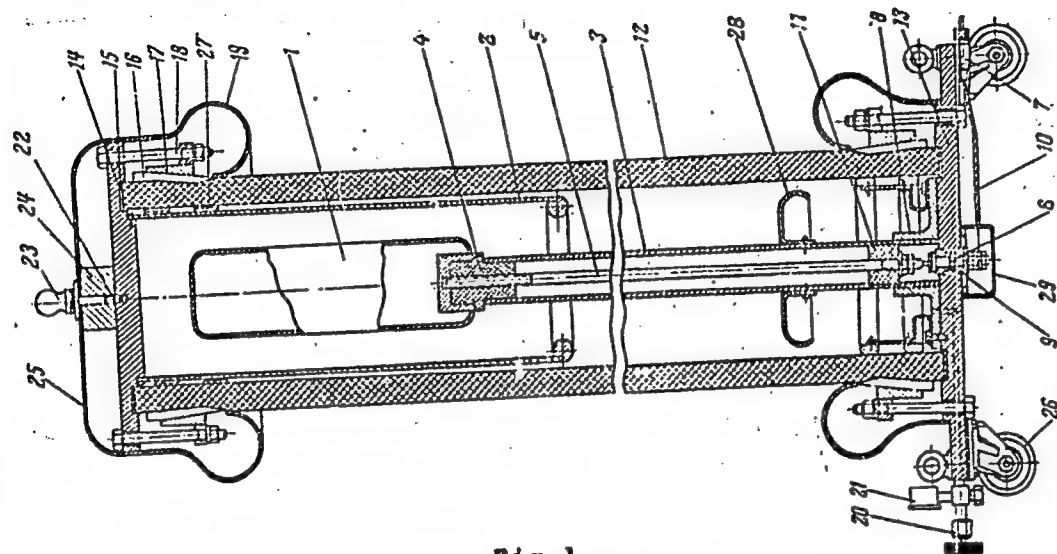
Fig.1.

Card 3/3

L 15534-63   EPR/EPF(c)/EWP(q)/EWT(m)/ES(v)/BDS   AFFTC/ASD   Ps-4/Pr-4/
Pe-4   WW/JD/WH/JG/K

ACCESSION NR: AP3004913   S/0120/63/000/004/0176/0180

AUTHOR: Pichugin, I. G.; Tairov, Yu. M.; Yas'kov, D. A.

TITLE: Preparing silicon carbide crystals

SOURCE: Pribory*i tekhnika eksperimenta, no. 4, 1963, 176-180

TOPIC TAGS: silicon carbide, crystal, SiC, crystal growing

ABSTRACT: An outfit is described that permits developing a temperature of
about 2,500C in a 500-cm^3 crucible containing 10^{-4}-torr vacuum and an inert gas.
The construction, including an electrically-heated graphite block, a set of
temperature-distributing screens, a water-cooled stainless-steel housing, a set
of electrodes, a vacuumizing system, etc., is described in detail; a structural
drawing and a photo of its general appearance are presented. The average output
is 50 SiC crystals 5-7-mm thick (with 6-7 hrs growing time), in one crucible.
Intended for semiconductor devices, the crystals have a carrier concentration of

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L 15534-63
ACCESSION NR: AP3004913   3

5×10^{17} cm^{-3} . "The authors are thankful to V. I. Abramov and V. P. Novikov for a number of valuable hints in developing the outfit." Orig. art. has: 4 figures.

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut (Leningrad Electrotechnical Institute)

SUBMITTED: 15Jun62   DATE ACQ: 28Aug63   ENCL: 00

SUB CODE: GE   NO REF SOV: 000   OTHER: 005

Card 2/2

L 12000-65   EWG(j)/EPA(s)-2/EWT(m)/EPF(c)/EPF(n)-2/EWG(v)/EPR/EPA(w)-2/EWP(j)/
EWP(b)/EWP(e)   Pc-4/Pe-5/Pr-4/Ps-4/Pt-10/Pu-4/Pab-10   AS(mp)-2/RAEM(e)/RAEM(c)/
ESD(gs)/ESD(t)   JD/WW/JG/RM/WH

ACCESSION NR: AP4046477   S/0032/64/030/010/1276/1278

AUTHOR: Pichugin, I. G.; Tairov, Yu. M.; Yas'kov, D. A.

TITLE: Laboratory vacuum furnace with automatic control for growing
silicon carbide crystals

SOURCE: Zavodskaya laboratoriya, v. 30, no. 10, 1964, 1276-1278

TOPIC TAGS: silicon carbide crystal, single crystal growth, electric
vacuum furnace, automatic temperature control, heat insulation cor-
rection, semiconductor silicon carbide

ABSTRACT: Automatic temperature control and a procedure for correction
of heat insulation and for changing the temperature gradient in the
electric vacuum furnace have been developed to secure growth of per-
fect silicon carbide crystals for semiconductor devices. The furnace
was described by the authors in Pribory*i tekhnika eksperimenta, no.
4, 1963. The automatic temperature control was based on measure-
ment of the ratio of the luminous flux from the heater to that from
a calibrated source. The filtered light signals from both sources

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L 12000-65

ACCESSION NR: AP4046477

3

were received on an antimony-cesium photoelectric cell and then am-
plified and detected in the same circuit. Different signals from
two sources set in motion a mechanism which automatically changes the
input voltage and hence resets the temperature of the heater to a
predetermined value. Deviation from the predetermined value in the
2300-2600C range was plus or minus 3C maximum. The temperature
gradient in the furnace was improved by 1) changing the number and
location of horizontal heat-insulating shields and 2) varying the
current input according to the changing temperature profile of the
heater. Correction of heat insulation was achieved by solving the
differential equation describing the distribution of heat flow in the
furnace on an electric network. The n-type crystals, 5-7 mm in dia-
meter, were grown on a graphite diaphragm. Orig. art. has: 3 figures
and 8 formulas.

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut (Leningrad
Electrotechnical Institute)

SUBMITTED: 00   ATD PRESS: 3120   ENCL: 00

SUB CODE: IE, SS   NO REF SOV: 001   OTHER: 001
Card 2/2

L 15821-66   EWP(e)/EWT(m)/ETC(f)/EWG(m)/T/EWP(t)/EWP(b)   IJP(c)   JD/WW/JG/AT/WH

ACC NR: AT6002252   SOURCE CODE: UR/2564/65/006/000/C206/0209

AUTHOR: Yas'kov, D. A.

ORG: None

TITLE: Conditions of growth of silicon carbide crystals on a graphite diaphragm
[Paper presented at the Third Conference on Crystal Growing held in Moscow from 18 to
25 November, 1963]

SOURCE: AN SSSR. Institut kristallografii. Rost kristallov, v.6, 1965, 206-209

TOPIC TAGS: crystal growing, silicon carbide, graphite, crystal structure

ABSTRACT: Silicon carbide crystals were grown from the vapor phase by sublimation of
a polycrystalline mass of SiC at 2300 — 2600C, followed by crystallization in the form of
plates in a region of lower temperatures (method due to J. A. Lely). Fig. 1 shows the
crucible employed and its position relative to the heater. Its main features are a graphite

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L 15821-66

ACC NR: AT6002252

Fig. 1. Design of a graphite crucible and its position relative to the heater.
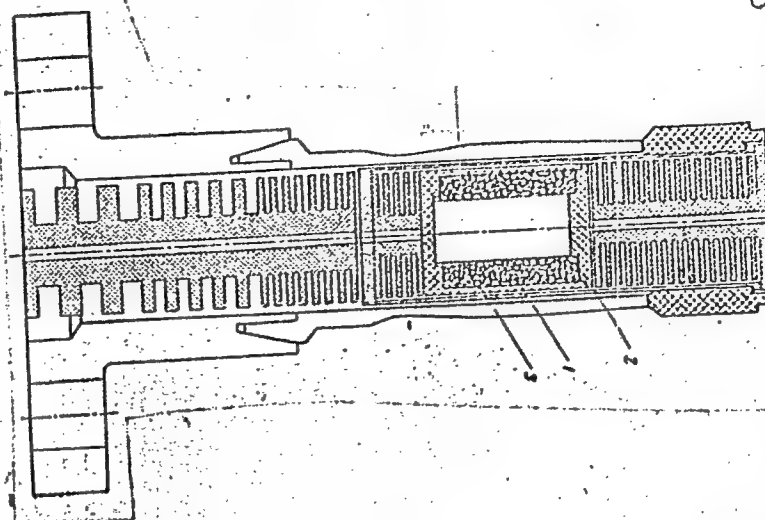
Card 2/3

L 15821-66
ACC NR: AT6002252

container 1 tightly sealed with lid 2, and a graphite diaphragm 3 with staggered radial apertures on its surface. The space between the diaphram and the wall of the container is filled with the starting material, i. e., commercial or synthesized silicon carbide. In order to obtain SiC crystals that are homogeneous in structure and suitable for applications in semiconductor technology, a number of conditions must be provided during the growth: (1) Very definite temperature gradients must be created along the axis of the diaphragm (the thermal field pattern was obtained by calculation); (2) The temperature of the heater must be kept rigorously constant during the entire period of crystal growth (particularly when graphite screens are used as thermal insulation); (3) All steps should be taken to eliminate the penetration of impurities into the zone of crystal growth. Data from x-ray and spectral analyses of crystals obtained under various conditions and results of studies of their electric properties will be published in a future paper. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 001

Card 3/3

L 34044-66   EWT(1)/EWT(m)/T/EWP(t)/ETI   IJP(c)   JD/GG/GD

ACC NR: AT6013568   (N)   SOURCE CODE: UR/0000/65/000/000/0309/0314

AUTHOR: Pichugin, I. G.; Smirnova, N. A.; Tairov, Yu. M.; Yas'kov, D. A.

ORG: Leningrad Electrotechnical Institute im. Ul'yanov (Leningradskiy elektrotekhnicheskiy institut)

TITLE: The effect of certain factors on growth and formation of SiC crystals

SOURCE: AN UkrSSR. Institut problem materialovedeniya. Vysokotemperaturnyye neorganicheskiye soyedineniya (High temperature inorganic compounds). Kiev, Naukova dumka, 1965, 309-314

TOPIC TAGS: silicon carbide, single crystal growth, ~~single crystal~~ crystal growing

ABSTRACT: The growing process of SiC crystals was studied in the 2350°-2500°C range in an argon atmosphere. Before sublimation, the SiC raw material was degassed at 200°C and $1 \cdot 10^{-5}$ mm Hg. The crystal growing duration was 6-12 hours. Best quality SiC crystals were obtained using a two-diaphragm crucible. The distance between diaphragms could be varied from 0.5 to 6 mm. It was found that the optimum conditions for growing high quality, homogeneous SiC crystals 6-8 mm in diameter (with an average defect density of 200 cm^{-2} and with a large proportion of crystals with defect density less than 30 cm^{-2}) are: an axial and radial temperature variation in the crucible maximum $\pm 50^\circ$C, heating from 2000°C to the desired process temperature at a rate not lower than 20°/

1/2

L 34044-66

ACC NR: AP6013568

/min, the diameter of the inner diaphragm equal to 35 mm, and the raw SiC grains of 3-5 mm in diameter. Orig. art. has: 3 figures.

SUB CODE:20,07/   SUBM DATE: 03Jul65/   ORIG REF: 001/   OTH REF: 001

Card 2/2

L 15947-66   EWT(m)/EWP(t)/EWP(b)   IJP(c)   JD/JG

ACC NR: AT6002255 (N)   SOURCE CODE: UR/2564/65/006/000/0234/0238

AUTHOR: Il'In, Yu. L.; Yas'kov, D. A.

ORG: None

TITLE: Methods of preparation of gallium phosphide crystals [Paper presented at the Third Conference on Crystal Growing held in Moscow from 18 to 25 November, 1963]

SOURCE: AN SSSR. Institut kristallografii. Rost kristallov, v.6, 1965, 234–238

TOPIC TAGS: crystal growing, gallium compound, phosphide

ABSTRACT: Gallium phosphide crystals were grown from a solution-melt containing gallium metal as the solvent, and also from the gas phase. In the solution-melt method, the crystal growth was found to be substantially affected by the temperature conditions. The optimum temperature of the reaction zone is 1150C, and the corresponding temperature of evaporation of phosphorus is 410C. In experiments with the gas phase, the crystals were obtained by a chemical reaction between phosphorus and gallium suboxide vapors. The crystal growth process was found to be substantially dependent on the evaporation temperature of the phosphorus and gallium suboxide, and on the degree of cooling. The temperature in the phosphorus evaporation zone should be 410C, in the region

Card 1/2

L 15947-66

ACC NR; AT6002255

gallium suboxide evaporation zone, 1050C, and in the center of the reaction zone, 1100C.
The crystals prepared by both methods were small in size, and reached 5 mm in width in
only a few rare cases. Orig. art. has: 4 figures.

SUB CODE: 20/ SUBM DATE: none/ OTH REF: 005

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Card 2/2

L 25460-66   EWT(1)/EWT(m)/ETC(f)/EWG(m)/EWP(e)   IJP(c)   AT/WH/JD/JG

ACC NR: AP6009691   SOURCE CODE: UR/0181/66/008/003/0948/0951

AUTHOR: Kal'nin, A. A.; Tairov, Yu. M.; Yas'kov, D. A.

ORG: Leningrad Electrotechnical Institute im. V. I. Ul'yanov-Lenin (Leningradskiy elektrotekhnicheskiy institut)

TITLE: Luminescence of silicon carbide with beryllium impurity

SOURCE: Fizika tverdogo tela, v. 8, no. 3, 1966, 948-951

TOPIC TAGS: silicon carbide, beryllium, semiconductor impurity, luminescence, luminescence center, activated crystal, pn junction, volt ampere characteristic, electroluminescence

ABSTRACT: The purpose of the investigation was to confirm experimentally that it is possible to use certain elements of group II as luminescence activators in silicon carbide crystals. Some of the advantages of using beryllium as the doping impurity are briefly discussed. Luminescent p-n junctions were produced by introducing beryllium in silicon carbide containing 8×10^{17}--5×10^{16} cm^{-3} nitrogen as the luminescence coactivator. The procedure and apparatus for preparing the junctions are briefly described. The resultant junctions had a volt-ampere characteristic featuring a large drop in the forward direction. In addition to the volt-ampere characteristic, the electroluminescence spectra and the lumen-ampere characteristics of the junction are presented. The results show that the electroluminescence of the obtained p-n junctions cannot be connected with the presence of boron, and can be attributed to

Card 1/2

L 25460-66

ACC NR: AP6009691   0

the activating action of beryllium in the silicon carbide. Evidence in favor of the
foregoing statement is presented. Orig. art. has: 4 figures.

SUB CODE: 20/   SUBM DATE: 20Jun65/   ORIG REF: 003/   OTH REF: 001.

Card 2/2 CC

L 09918-67   EWT(m)/EWP(t)/ETI   IJP(c)   JD/JG

ACC NR: AP6033560   SOURCE CODE: UR/0181/66/008/010/2982/2985

AUTHOR: Kal'nin, A. A.; Pasynkov, V. V.; Tairov, Yu. M.; Yas'kov, D. A.

ORG: Leningrad Electrotechnical Institute im. V. I. Ul'yanov (Lenin) (Leningrad-skiy elektrotekhnicheskiy institut)

TITLE: Photoluminescence of silicon carbide containing a beryllium impurity

SOURCE: Fizika tverdogo tela, v. 8, no. 10, 1966, 2982-2985

TOPIC TAGS: photoluminescence, silicon carbide, beryllium, impurity, luminescence extinction, electron hole, luminescence

ABSTRACT: Beryllium when added to silicon carbide is shown to render the latter luminescent. Both electron- and p-type silicon carbide samples were found to luminesce. At the same time, the spectral radiation composition was found to vary. The activation energy required for the extinction of luminescence for electron- and p-type silicon carbide samples is about the same (approximately 0.32 ev). Electroluminescent light sources were prepared in which electrons were injected into luminescent p-type silicon carbide samples. Orig. art. has: 3 figures. [Authors' abstract]

SUB CODE: 20/SUBM DATE: 16Mar66/ORIG REF: 005/OTH REF: 006/

Card 1/1

ACC NR: AP6036784   SOURCE CODE: UR/0363/66/002/011/1939/1943

AUTHOR: Il'in, Yu. L.; Sorokin, V. S.; Yas'kov, D. A.

ORG: Leningrad Electrotechnical Institute im. V. I. Ul'yanov (Lenin)
(Leningradskiy elektrotekhnicheskiy institut)

TITLE: The effect of some factors on the process of formation and growth of gallium
phosphide ingots

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materially, v. 2, no. 11, 1966,
1939-1943

TOPIC TAGS: gallium compound, phosphide, semiconductor crystal

ABSTRACT: In the production of gallium phosphide by the method of horizontal zone
melting, the controlling parameters are the temperature of the zone of high frequency
heating, the vapor pressure of phosphorus in the working ampoule, and the rate of its
displacement through the high temperature zone. In the experiments, the temperature
of the zone of high frequency heating was varied from 1400-1600°C, in steps of 30°
each. At each value of the temperature, the vapor pressure of phosphorus in the
working ampoule was varied from 0.1 to 20 atm. In turn, for each value of the
temperature and phosphorus vapor pressure, the rate of displacement of the working
ampoule through the high temperature zone was varied from 0.1 to 2.6 mm/min. The

UDC: 546.681'181.1:621.9-421

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ACC NR: AP6036784

structure of the ingots obtained is illustrated in the article by a series of microphotos. The following conclusions were drawn: 1) to obtain ingots of gallium phosphide.which do not contain inclusions of gallium, certain conditions must be observed, the most important of which are the temperature in the zone of high frequency heating, the vapor pressure of phosphorus in the working ampoule, and the rate of displacement of the ampoule. Dense ingots of gallium phosphide of sufficiently large dimensions can be produced at a temperature in the heating zone not below 1540°C, a vapor pressure of phosphorus of 12 atm, and a rate of growth of the order of 1.3 mm/min; 2) the size of the monocrystalline blocks and ingots of gallium phosphide is determined by the thermal conditions in the growth zone, and depends on the form of the crystallization front; 3) use of an inductor of special form makes it possible to vary the form of the crystallization front and to obtain monocrystalline blocks and ingots suitable for use in the semiconductor industry. Orig. art. has: 6 figures.

SUB CODE: 11, 20/ SUBM DATE: 01Nov65/ ORIG REF: 001

Card 2/2

ACC NR: AP7008523   (λ, N)   SOURCE CODE: UR/0363/67/003/002/0296/0299

AUTHOR: Il'in, Yu. L.; Yas'kov, D. A.

ORG: Leningrad Electrotechnical Institute (Leningradskiy elektrotekhnicheskiy institut)

TITLE: Synthesis of gallium phosphide by zone melting under pressure

SOURCE: AN SSSR. Izvestiya. Neorganicheskiye materialy, v. 3, no. 2, 1967, 296-299

TOPIC TAGS: gallium compound, phosphide, zone melting

ABSTRACT: A technique for synthesizing gallium phosphide by zone melting under argon at 5 atm is described which makes it possible to grow ingots having dimensions of single crystal blocks up to 10x8x3 mm^3. Since the most crucial step in the technological process of synthesis of gallium phosphide are the temperature conditions of zone melting, it is necessary to have close control over the temperature in the melt zone, and also over the pressure of phosphorus in the working ampoule. The content of impurities in gallium phosphide and their distribution over the length of the ingot depend on the number of passes through the zone. The main source of impurities, particularly silicon, is quartz. The synthesized and zone-refined gallium phosphide had a free charge carrier concentration of about 5×10^{17} cm^{-3}, and a hole mobility at room temperature of about 60 cm^2/V sec. Orig. art. has: 2 figures.

SUB CODE: 07/ SUBM DATE: 01Nov65/ ORIG REF: 003/ OTH REF: 001

Card 1/1   UDC: 546.681,181.1:542.91

ACC NR: AP7005337   SOURCE CODE: UR/0181/67/009/001/0145/0149

AUTHOR: Pikhtin, A. N.; Yas'kov, D. A.

ORG: Leningrad Electrotechnical Institute im. V. I. Ul'yanov (Lenin) (Leningradskiy elektrotekhnicheskiy institut)

TITLE: Dispersion of the refractive index of light in gallium phosphide

SOURCE: Fizika tverdogo tela, v. 9, no. 1, 1967, 145-149

TOPIC TAGS: gallium phosphide, light dispersion, refractive index, light reflection, laser optic material

ABSTRACT: In view of the lack of detailed data on this subject, and of the importance of GaP as an injection-laser material, the authors study in detail the refraction of light in this substance and present an analytic expression with which the refractive index can be determined over a wide range of photon energies (1.0 - 2.35 ev) and for different temperatures (80 - 290K). The theoretical formula was derived from the dispersion relations. The experiments consisted of absolute measurements of the specular-reflection coefficient of polished n- and p-type GaP plates and determining the refractive index by measuring the angle of least deflection of the radiation by a prism made of the investigated GaP. The test procedures are described briefly. The refractive index drops from an approximate value of 3.4 at 2.5 ev to 2.006 at 290K and 2.983 at 80K at zero photon energy. The temperature coefficient of the refractive index is $\sim(-5 \times 10^{-4})$ ev/°K at 290K. Orig. art. has:

Card 1/2   UDC: none

ACC NR: AP7005337

[02]

3 figures, 9 formulas, and 1 table.

SUB CODE: 20/   SUBM DATE: 04Jun66/   ORIG REF: 004/   OTH REF: 007

ATD PRESS: 5116

Card 2/2

L 14157-66   EWA(h)/ EWP(j)/EWT(m)/EWA(l)   RM/JK
ACC NR: AP6001311   SOURCE CODE: UR/0248/65/000/009/0018/0022

AUTHOR: Ivannik, B. P.; Klipson, N. A.; Mamedova, T. G.; Ryabchenko, N. I.;   64
Sklobovskaya, M. V.; Yaskevich, A. G.

ORG: Institute of Medical Radiology, AMN SSSR, Obninsk (Institut meditsinskoy
radiologii AMN SSSR)

TITLE: Molecular mechanisms underlying radiation-induced cytogenetic injuries

SOURCE: AMN SSSR. Vestnik, no. 9, 1965, 18-22

TOPIC TAGS: free radical, radiation injury, ionizing radiation, UV radiation, DNA

ABSTRACT: The nature of the injuries produced by different forms of free radicals
and by radiation at the cellular and molecular levels is investigated and the local
injuries to DNA and DNP are described. The damage to the basic matrix structure of
the cell nucleus following ionizing radiation is secondary to the cell's direct ab-
sorption of radiant energy. This damage cannot be duplicated by the action of free
radicals or ultraviolet radiation. There is a difference between the primary physi-
cochemical changes in DNA and DNP arising from ionizing radiation, free radicals,

UDC: 612.014.22].24-06 : 612.014.482+612.014.482 : 612.014.22].24

Card 1/2

L 14157-66

ACC NR: AP6001311

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or from ultraviolet rays. Orig. art. has: 2 figures, 2 tables.

SUB CODE: 06/   SUBM DATE: 05Jun65/   ORIG REF: 005/   OTH REF: 003

Card 2/2

L 00014-66   EWT(1)/T/EWA(h)   IJP(c)   AT

ACCESSION NR: AP5021366

UR/0120/65/000/004/0213/0216

536.587

AUTHOR: Kal'nin, A. A.; Tairov, Yu. M.; Yas'kov, D. A.

TITLE: An automatic temperature control system for the growth of crystals of high temperature resistant semiconductor materials

SOURCE: Pribory i tekhnika eksperimenta, no. 4, 1965, 213-216.

TOPIC TAGS: silicon single crystal, automatic temperature control, crystal structure, automatic control system, crystal growth, semiconductor single crystal, single crystal growing

ABSTRACT: An automatic temperature control system for a 30 kw device intended for the growth of silicon carbide crystals is discussed. The instrumental error is reduced by a) the use of electron multiplication which reduces the intensity of photocathode illumination with simultaneous retention of a good signal-to-noise ratio; b) the illumination of the photocathode by short pulses with the subsequent restitution of the spectrum of the favorable signal; and c) by thermostatic control of the receiver, automatic brightness control, and uniform illumination of the photocathode. The range of temperature control is between 2400 and 2600C but this may be changed by an appropriate choice of the obtuator filter, the dynamic error

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L 00014-66

3

ACCESSION NR: AP5021366

of the control does not exceed ±3C, and the transient process (when operating with a computer) is reduced 88 to 90% compared to operation with commercial linear regulators. The influence of the thermostatic control of the growth zone on the perfection of the structure of the resulting crystals is also discussed. Orig. art. has: 3 formulas and 3 figures.

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut (Leningrad Electrical Engineering Institute)

SUBMITTED: 21Dec64   ENCL: 00   SUB CODE: IE, SS

NO REF SOV: 002   OTHER: 001

Card 2/2

L 57870-65   EWT(1)/EPA(s)-2/EWT(m)/T/EWP(t)/EEC(b)- 'P (h)   Pt-7/P{-4/Pu-4
IJP(c)   JD/WW/JG/GG
ACCESSION NR: AP5016397

UR/0120/65/000/003/0213/0216
548.5

AUTHOR: Il'in, Yu. L.; Yas'kov, D. A.

TITLE: Laboratory unit for obtaining gallium phosphide crystals

SOURCE: Pribory i tekhnika eksperimenta, no. 3, 1965, 213-216

TOPIC TAGS: gallium, phosphorus, gallium phosphide crystal, gallium phosphide synthesis, crystal growing unit

ABSTRACT: The design and operation of a unit for synthetizing gallium phosphide crystals from the melt of the stoichiometric composition at elevated pressure of phosphorus vapor are described. The crystals are grown in a hermetically sealed fused quartz ampul, 20 mm in diameter and 330 mm long, in which liquid gallium placed in a graphite boat is saturated with phosphorus under a pressure of 13.45 atm at about 1525C, i.e., the melting temperature of gallium phosphide. Grade B-5 red phosphorus is placed in another boat in the ampul. Before it is placed into the pressure chamber, the ampul is degassed in a vacuum of 10^{-5} tor for 5—6 hr. The pressure of an inert gas in the pressure chamber compensates the pressure of phosphorus vapor in the ampul and prevents its breakage. The reaction zone is heated

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L 57870-63
ACCESSION NR: AP5016397   /

by a 25-kw hf induction heater using current at a frequency of 5.28 mc. The speed
at which the ampul passes through the heating zone can be varied from 0.1 to 2 mm per
min. The entire assembly is enclosed in a water-cooled stainless-steel casing.
In tests, light-yellow crystals of gallium phosphide, 90 mm long and not less than
50 mm in diameter, were obtained in one pass through the reaction zone at a speed
of 0.3 mm/min and a phosphorus-vapor pressure of about 10 atm. Orig. art. has:
2 figures.   [MS]

ASSOCIATION: Leningradskiy elektrotekhnicheskiy institut (Leningrad Electro-
technical Institute)

SUBMITTED: 10Jul64   ENCL: 00   SUB CODE: SS, IC

NO REF SOV: 001   OTHER: 004   ATD PRESS: 4038

Card 2/2

YASKOV, N. N.

USSR/Engineering - Tools

Card 1/1

Authors   :   Karagodin, Ya. P.; and Yaskov, N. N'

Title   :   Design and Exploitation of Ceramic Cutters

Periodical   :   Stan. i Instr. Ed. 1, 31-33, Jan/1954

Abstract   :   General information on the design and use of cutting tools fitted
                    with ceramic heads is given. The cutters are used for the surface
                    smoothing of steel shafts and axes, made at mark 45 steel at a
                    cutting speed of 270 to 350 m/mm, depth of cutting being up to
                    5 mm, and speed at 0.45 mm. Illustrations.

Institution   :   ....

Submitted   :   ....

YASKOV, N. N.

USSR/Engineering - Machine tools

Card 1/1   Pub. 103 - 15/24

Authors   : Karagodin, Ya. P., and Yaskov, N. N.

Title   : Roughing tool

Periodical   : Stan. i instr. 11, page 33, Nov 1954

Abstract   : The advantages of assembled tools over the ordinary soldered roughing tools are listed. The geometrical parameters of an assembled roughing tool are described. The work of the snagging machine using an assembled roughing tool was found to be more stable and the intensity of heat formation at point of cutting is much more reduced in comparison with previously used tools. Drawings.

Institution : . . . .

Submitted   : . . . .

YASKOV, N.N.

Tail spindle with rotating center. Stan. i inst. 26 no.9:
29-30 S '55.   (MLRA 9:1)
                 (Lathes)

BURDA, V.T.; YASKOV, V.N.

Business accounting of operations at the lead smelter of the Lenino-
gorsk Combine. TSvet. met. 36 no.12:78-79 D '63.   (MIRA 17:2)

ZHERDEV, L.G.; POLYAKOV, I.I.; MOSKOVTSEV, L.G.; YAS'KOV, Ye.I.

Structure of the bath of a rotary silico-chromium furnace. Izv.vys.
ucheb.zav.; chern.met. 8 no.45/40 '65.

(MIRA 18:8)

1. Dnepropetrovskiy metallurgicheskiy institut.

YASKOVA, G.N.; YAKOVLEV, M.N.

Some conditions for the stability of Petrov-Galerkin's method.
Trudy Mat.inst. 66:182-189 '62.   (MIRA 15:11)
                        (Operators (Mathematics)) (Matrices)

Yas'kova, Nadezhda Tikhonovna

BRENINA, Varvara Vasil'yevna; MINAKOVA, Anna Grigor'yevna; YAS'KOVA, Nadezhda Tikhonovna; SVERDLOVA,I.S., redaktor; GUSEV,L.A., redaktor; KHELEMSKAYA,L.M., tekhnicheskiy redaktor

[Our work practice with Baudot apparatus] Nash opyt raboty na apparate Bodo. Moskva, Gos.izd-vo lit-ry po voprosam sviazi i radio, 1955. 30 p.   (MLRA 9:3)
                    (Telegraph)

15-57-4-4098

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 4,
                   p 6 (USSR)

AUTHORS: Sikstel', T. A., Yaskovich, B. V.

TITLE: The Characteristics of the Cambrian Rocks of Southern
              Fergana (K kharakteristike kembriyskikh otlozheniy
              Yuzhnoy Fergany)

PERIODICAL: Tr. Sredneaz. un-ta, 1956, Nr 82, pp 115-118

ABSTRACT: In addition to the known data, the authors have
              established the fact that Cambrian deposits are
              widespread in the border area of Madygen, where they
              extend for 20 km from the source of Dzhida-Bulak
              (Shurab region) westward to the canyon of Madygen.
              The Cambrian contains a series of cherty, oolitic, and
              algal-nodular limestones containing the Hormogoneae-
              Corbularia conglutinata Vologdin and lying on top of a
              series of sandstones, diabases, and porphyrites, with
              lenses of limestone containing remains of brittle
Card 1/2   inarticulate brachiopod valves. The section is topped

The Characteristics of the Cambrian Rocks (Cont.)   15-57-4-4098

by a ferruginous-siliceous breccia. The thickness of the Cambrian
is measured in hundreds of meters.
Card 2/2   A. I. S.

YASKOVICH, B.V.

New data on the presence of bitumens in Cambrian rocks of southern Fergana. Izv. AN SSSR. Ser. geol. 23 no.2:107-109 F '58.

(MIRA 11:5)

1.Uzbekskoye geologicheskoye upravleniye, Tashkent.
(Fergana--Bitumen)

YASKOVICH, B.V.

New data on the Ordovician in the southwestern Tien Shan. Uzb. geol.
zhur. no.1:53-56 '59.   (MIRA 12:7)

1.Glavgeologiya UzSSR.
                        (Tien Shan--Geology, Stratigraphic)

YASKOVICH, B.V.

Stratigraphy of Cambrian sediments in southern Fergana.
Trudy Uz.geol.upr. no.1:3-8 '60.   (MIRA 14:8)
              (Fergana--Geology, Stratigraphic)

SIKSTEL', T.A.; YASKOVICH, B.V.

New data on the age of the Akchinskaya sedimentary-volcanic
series of the Kurama Range. Trudy Uz.geol.upr. no.1:25-29
'60.   (MIRA 14:8)
           (Kurama Range--Geological time)

KHAYRULLINA, T.I.; YASKOVICH, B.V.

Recent data on lower Cambrian deposits in the basin of the Altykul' River. Izv. Otd. geol.-khim. i tekh. nauk AN Tadzh. SSR no.2:111-117 '61.   (MIRA 15:1)

1. Geologo-s"yemochnaya poiskovaya ekspeditsiya Glavgeologii UzbSSR.
     (Altykyl' Valley--Geology, Stratigraphic) (Trilobites)

YASKOVICH, B.V.

Cambrian sediments in the western end of the Turkestan Range. Trudy
Uz. geol. upr. no.2:3-6 '62.   (MIRA 16:8)
                    (Turkestan Range--Geology, Stratigraphic)

SIKSTEL', T.A.; YASKOVICH, B.V.

Mesozoic volcanism in Central Asia. Trudy Uz. geol. upr. no.2:
14-20 '62.   (MIRA 16:8)

(Asia, Central—Volcanoes)

L 62861-65

ACCESSION NR: AP5019031

UR/0286/65/000/012/0066/0067
621.673.132
621.868.277.3

5
B

AUTHOR: Artamonov, Yu. G.; Novozhilov, Yu. I.; Yaskunov, N. P.

TITLE: A lift for a hauling tractor. Class 35, No. 172013

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 12, 1965, 66-67

TOPIC TAGS: tractor, logging, hoist, lift

ABSTRACT: This Author's Certificate introduces a lift for a hauling tractor. The device contains a rotating column, a boom and lever which are moved by hydraulic cylinders, and a jaw grab with hydraulic drive. The grab is mounted on the free end of the lever. The device is designed for loading and hauling both individual logs and bundles of logs. The unit has two pulleys through which the winch cable from the tractor passes. One of these pulleys is mounted on an axle which hinges the boom to the rotating column, while the other pulley is mounted on the boom by hinges which connect it with the lever and with the rotating column.

Card 1/3

L 62861-65

ACCESSION NR: AP5019031   ⃝

ASSOCIATION: Onezhskiy traktornyy zavod (Onega Tractor Plant)

SUBMITTED: 06Feb64   ENCL: 01   SUB CODE: IE, PR

NO REF SOV: 000   OTHER: 000

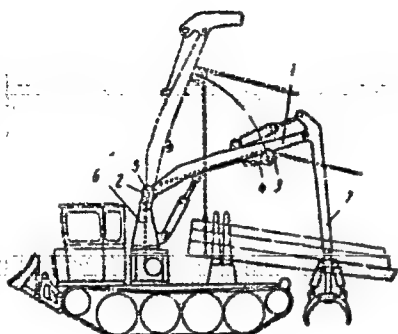Card 2/3

L 62861-65

ACCESSION NR: AP5019031

ENCLOSURE: 01

Fig. 1. 1--boom; 2 and 3--pulleys;
4--cable; 5--axle; 6--rotating column;
7--lever

Card 3/3

DOGVAL', Viktor Ivanovich; LIVSHITS, Erik Abramovich; LYSOCHENKO, Aleksandr
    Alekseyevich; NADEZHIN, Konstantin Nikolayevich; NOVOZHILOV, Yuriy
    Ivanovich; SOKOLOV, Nikolay Aleksandrovich; FEDOSEYEV, Oleg Vasil'-
    yevich; YASKUNOV, Nikolay Pavlovich; MAGIROVSKIY, N.P., red.; PAN-
    KRASHOV, A.P., red.; POD"YEL'SKAYA, K.M., tekhn. red.

    [TDT-40M diesel timber-skidding tractor] Trelevochnyi traktor
    TDT-40M. Pod red.N.P.Magirovskogo. Petrozavodsk, Gos. izd-vo Karel'-
    skoi ASSR, 1961. 355 p.   (MIRA 14:10)
                    (Tractors—Design and construction)

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SALDADZE, K.M.; YASMINOV, A.A.; GVOZDEVA, S.N.

Systems of distribution of electrolyte in electrodializers. Khim. prom. no.10:756-760 0 '63.   (MIRA 17:6)

ANDRIANOVA, N.V.; REYTLINGER, S.A.; SHCHERBINA, N.G.; YASMINOVA, L.I.

Joining of polyethyleneterephthalate films. Plas' .massy no.1:73
'64.   (MIRA 17:6)

L 27272-65   EWT(m)/EPF(c)/EWP(v)/EPR/EWP(J)/T   Pc-4/Pr-4/Ps-4   WW/RM

ACCESSION NR: AP4009841   S/0191/64/000/001/0073/0073

AUTHORS: Andrianova, N.V.; Reytlinger, S.A.; Shcherbina, N.G.;
Yasminova, L.I.

TITLE: Cementing polyethylene terephthalate film

SOURCE: Plasticheskiye massy*, no. 1, 1964, 73

TOPIC TAGS: polyethylene terephthalate, film, cementing welding
cementing techniques, polyester resin cement, polyethylene tere-
phthalate film, TF-60 polyester resin cement, TF-60

ABSTRACT: The literature on welding and cementing polyethylene
terephthalate film is discussed. The following cementing technique
is proposed using ethylene glycol polyesters of terephthalic or
sebacic acids as the adhesive. A methylene chloride solution of
polyester TF-60 is brushed on the film to be cemented. For a film
12 microns thick the desired seam width is 5-10 mm.; for 25 micron
film, 10-15; and for 50 micron film, 15-20. The layer of resin
between the film should be 8-10 microns thick. The film is air
dried for 3-5 minutes to remove the solvent; the coated film is

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L 27272-65

ACCESSION NR: AP4009841

laid and rolled with rollers heated to 150-1700 at a rate of 1 m./ min. at 1-1.5 kgs/cm^2 pressure. Instead of applying a resin solution, tapes of TF-60 resin on various backings may be inserted between the film and rolled as before. Orig. art. has: 1 table

ASSOCIATION: None

SUBMITTED: 00   ENCL: 00

SUB CODE: OC, MT   NR REF SOV: 004   OTHER: 013

Card 2/2

YASHAYA, L.V.

Clinical aspects of rheumatism in preschool children. Pediatriia
39 no.3:87 My-Je '56.   (MIRA 9:9)

1. Iz revmatologicheskogo otdeleniya otdela profilaktiki i terapii
detskikh bolezney Khar'kovskogo nauchno-issledovatel'skogo instituta
okhrany materinstva i mladenchestva imeni N.K.Krupskoy (dir.-kandidat
meditsinskikh nauk A.I.Kornikova)
        (RHEUMATIC FEVER)

LEVITUS, Ye.L., DMITROVA, N.A., YASNAYA, L.V.

Functional capacity of the cardiovascular system in rheumatic
children. Vop.okh.mat. i det. 3 no.6:80 N-D '58   (MIRA 11:12)

1. Iz revmaticheskogo otdeleniya (nauchnyy rukovoditel' Ye.L. Levitus)
Khar'kovskogo nauchno-issledovatel'skogo instituta Okhrany materinstva
i mladenchstva imeni N.K. Krupskoy (dir. kand.med.nauk A.I. Kornilova).
                     (RHEUMATIC FEVER)
                     (CARDIOVASCULAR SYSTEM)

YASNETSKAYA, I. A. (Leningrad)

Clinical aspects of primary cancer of the liver. Klin. med. no.11:
33-37 '61.   (MIRA 14:12)

1. Iz kafedry gospital'noy terapii Voyenno-meditsinskoy akademii
imeni S. M. Kirova (nach. - deystvitel'nyy chlen AMN SSSR prof.
N. S. Molchanov)

(LIVER—CANCER)

YASHETSOV, V.S.

Effect of aminazine on gastric secretion. Farm. i toks. 19
supplement:33 '56.   (MLRA 10:7)

1. Kafedra farmakologii Smolenskogo meditsinskogo instituta
(nauchnyy rukovoditel' - G.A.Ponomarev)
        (GASTRIC JUICE,
            secretion, eff. of chlorpromazine (Rus))
        (CHLORPROMAZINE, effects,
            on gastric secretion (Rus))

YASNETSOV   V S

USSR / Pharmacology, Toxicology.   Histamine and   V
           Antihistaminics.

Abs Jour: Ref Zhur-Biol., No 18, 1958, 85185.

Author : Yasnetsov, V. S.
Inst   : Smolensk Medical Institute.
Title   : The Influence of Dimedrol on Gastric Secretion.

Orig Pub: Tr. Smolenskogo med. in-ta, 1957, Vol 6, 83-90.

Abstract: Dimedrol (D), given intramuscularly to dogs with
          an isolated Pavlov gastric pouch, in a dose of 10
          mg/kg 5 min prior to feeding (200 gm of white bread),
          produced within the first hour a sharp diminution,
          with subsequent elevation, of the secretion of
          gastric juice, free HCl, and total acidity; the
          action of D on the amount of enzyme during this
          period was inconstant. The secretion ordinarily
          becomes normalized by the seventh hour. D given

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USSR / Pharmacology, Toxicology. Histamine and   V
        Antihistaminics.

Abs Jour: Ref Zhur-Biol., No 18, 1958, 85185.

Abstract: in the same dose after 3 hours of gastric secre-
          tion, produces the greatest reduction in gastric
          secretion, free HCl, and total acidity by the sec-
          ond or third hour after injection, reducing slightly
          the enzyme content within the first hour. Suppres-
          sion of gastric secretion under the influence of
          D is related, apparently, to the parasympatholytic
          action of D. The effectiveness of the influence
          of D on individual peculiarities of the animals,
          also. -- A. Yu. Mychko-Mergin.

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